

INDEX

TO THE

MATHEMATICAL GAZETTE

No. 311, FEBRUARY 1951—No. 314, DECEMBER 1951.

1. Articles.
2. Mathematical Notes.
3. Reviews and Notices.
4. News of Branches.
5. Gleanings Far and Near.
6. Correspondence.
7. Miscellaneous.
8. Plates.

ARTICLES.

AUTHOR.	TITLE.	PAGE.
T. J. Davies and V. Mauranen.	An application of Cornu's spiral to the mathematical theory of the motion of an unrotated rocket.	12
L. Goodstein.	An introduction to the theory of continuous groups.	91
B. S. Haldane.	The extraction of square roots.	89
R. Hassé.	Presidential Address : My fifty years of mathematics.	153
Hope.	The nets of the regular star-faced and star-pointed polyhedra.	8
Kreisel.	Some remarks on the foundations of mathematics.	23
W. McLachlan.	Non-linear differential equation having a periodic coefficient.	32
	Application of Mathieu's equation to stability of non-linear oscillator.	105
Mauranen.	See E. T. J. Davies.	
Percy Nunn.	The training of the teacher. (Reprinted from Vol. IX, with introductory note by J. T. Combridge.)	41
J. F. Primrose.	The mathematics of Easter.	225
T. Rajagopal.	On the intersections of a central conic and its principal hyperbolas.	97

AUTHOR.	TITLE.	PAGE
F. Smithies.	Abstract analysis.	2
K. F. Solloway.	The logarithmic abacus.	82
D. G. Taylor.	On certain configurations of congruent triangles. II.	80
J. Topping.	Approximate methods in elementary mathematics.	37
C. O. Tuckey.	The Geometry Reports.	234
J. Williams.	Small oscillations with damping.	29
E. C. Witcombe.	A school mathematical society.	77
R. C. Yates.	Centre of curvature for the conics.	11
Scholarship syllabuses in the General Certificate of Education and in University examinations.		173
P. C. Unwin (p. 173) ; H. E. Parr (p. 175) ; F. J. Tongue (p. 177) ; W. L. Ferrar (p. 179) ; summary of discussion (p. 180).		
Trigonometry in the Main School.		223
C. O. Tuckey (p. 223) ; G. L. Parsons (p. 232) ; summary of discussion (p. 235).		
Work from Modern Schools.		163
Miss L. D. Adams (p. 165) ; R. North (p. 167) ; E. J. James (p. 169) ; Miss K. Sowden (p. 171).		
Annual Meeting, 1951.		71
Report of the Council for 1950		75

MATHEMATICAL NOTES.

AUTHOR.	No.	TITLE.	PAGE
H. Ap Simon.	2226	The luck of the toss in squash rackets.	193
J. K. Bailey.	2227	Right-angled triangles.	194
H. A. Baxter.	2221	Resultant of two forces acting simultaneously on a rigid body.	186
J. E. Blamey.	2257	On Note 2111.	262
R. P. Boas, Jr.	2252	Convergence of series and integrals.	258
M. Bridger.	2202	Evaluation of complex roots of an algebraic equation.	109
A. Buckley.	2250	On the polar equation of a conic.	257
	2253	A note on parallel axis theorems.	260
E. W. Burn.	2236	Isogonal points.	246
I. W. Busbridge.	2210	On Note 2053 (Normals to a parabola).	119
R. Cade.	2222	On a three-particle problem in elementary dynamics.	187
C. T. K. Chari.	2219	On Note 1202. Special relativity and the Lorentz transformation.	184
J. H. Clarke.	2228	Constructions for the roots of a quadratic equation.	196
L. E. Clarke.	2212	The shortest distance between two skew lines.	120
B. W. Conolly.	2243	An application of the Fourier transform convolution.	251
A. C. Cossins	2223	Variations on an old theme.	188
H. L. Cox.	2196	A peculiar function arising from an everyday problem.	43
M. F. Egan.	2251	A proof of Hadamard's theorem.	258
H. G. Eggleston.	2204	A proof that there is no triangle the magnitudes of whose sides, area and medians are integers.	114

INDEX

V

PAGE	AUTHOR.	No.	TITLE.	PAGE.
171	W. D. Evans.	2208	On prime triangles.	118
81	H. M. Finucan.	2217	Repeated factors in the linear equation.	183
80		2218	The inverse square law.	184
37	P. Gant.	2203	Differentials.	111
236	F. M. Goldner.	2200	Loss of energy on impact.	51
28		2255	On Note 2066 : the chamelen.	261
77	H. G. Green.	2240	On the drawing of curves of the type $xf(y) \pm yf(x) = 0$.	248
11		2241	On the conditions for a quadric of revolution.	249
171		2242	On the inverse trigonometric functions.	250
	H. N. Haskell.	2238	The swastika.	247
	W. Hope-Jones.	2188	" Surprising ".	44
	L. S. Kothari.	2245	A note on magic squares.	252
228	H. Lindgren.	2244	Approximation to \sqrt{x} .	252
	H. V. Lowry.	2198	The triple vector product.	50
168	A. I. Martin.		See G. Power.	
	F. G. Maunsell.	2191	A question in statics.	46
	E. A. Maxwell.	2190	Every conic consists of two straight lines.	45
71	E. H. Neville.	2189	The digits in the decimal form of π .	44
78		2215	Notes on conics : 14. An analytical proof of Pascal's theorem.	123
		2248	Notes on conics : 15. Oblique eccentricity.	255
		2249	Notes on conics : 16. Bicircular generation and tangential properties.	256
	D. K. Picken.	2199	On energy of impact.	50
		2229	Acute or obtuse?	239
PAGE	V. Popovic.	2237	The inequality between the arithmetic and geometric means.	246
193				
194	H. K. Powell.	2224	Proof of a formula in dynamics.	189
186	G. Power and A. I. Martin.			
262		2206	The sphere theorem in hydrodynamics.	116
258	E. J. F. Primrose.	2205	On conics which touch five given conics.	115
109	C. C. Puckette.	2246	On Note 2093 : skew-symmetrical determinants.	254
257		2247	On Notes 2028, 2092 : the divergence of $\sum n^{-s}$ and Pringsheim's theorem.	255
260				
246	A. Robson.	2209	Simple equations.	118
119		2216	Elementary proof that the feet of the normals from a given point to a given parabola are concyclic with the vertex of the parabola.	183
187				
184	A. Rose.	2234	An analogue of Ceva's theorem.	243
195	M. Rumney.	2239	A simple construction for determinants of given value N .	247
120				
251	W. L. C. Sargent.	2213	On the differentiation of a function of a function.	121
188	W. W. Sawyer.	2193	The remainder theorem for operators.	47
48	A. G. Sillitto.	2233	A symmetrical figure to demonstrate Pythagoras' theorem.	242
258		2254	On some familiar invariants.	260
114	T. D. Sills.	2220	On the Frenet formulae.	186

AUTHOR.	No.	TITLE.	PAGE.	AUTHOR.
V. Thébault.	2230	Au sujet de certains polygones convexes inscriptibles.	24	B. Bo
	2231	Sur des cercles associés à un triangle.	24	
C. O. Tuckey.	2232	The equations for the centre of a conic.	24	G. Bo
G. Tyson.	2197	A fallacy.	5	
G. N. Vlahavas.	2225	Geometrical aspects of a linear combination of equations.	19	M. E.
				H. Br
D. A. T. Wallace.	2207	Mean value theorems for higher derivatives.	11	L. de
C. Walmsley.	2214	Differential operators in Leibniz's theorem and integration by parts.	12	
				R. C.
G. L. Watson.	2201	Pandiagonal and symmetrical magic squares.	10	K. R.
J. J. Welch.	2192	Similar right-angled triangles.	4	J. Ch
	2211	On Note 2058 : a property of the cyclic quadrilateral.	12	
J. D. Weston.	2194	Skew-symmetric determinants of even order.	4	K. Ch
	2195	Orthogonality of Bessel functions.	4	G. R.
F. Westwick.	2256	The series $\sum n^p/n!$	26	
T. J. Willmore.	2235	Note on a problem in solid geometry.	24	R. G.

REVIEWS AND NOTICES.

AUTHOR.	TITLE.	REVIEWER.	PAGE.	AUTHOR.
W. Ackermann.	See D. Hilbert.			
P. Appell.	Analyse mathématique. I. II. {6}.	T. A. A. B.	223	
	Revised by G. Valiron.			A. Ei
N. Arley and K. R. Buch.	Introduction to the theory of probability and statistics.	F. Sandon.	288	Ky F
H. G. Ayres.	Basic mathematical analysis.	S. Inman.	265	W. F
J. H. S. Bailey.	Elementary analytical conics. {2}.	T. A. A. B.	151	R. A.
B. B. Baker and E. T. Copson.	The mathematical theory of Huygens' principle {2}.	I. N. Sneddon.	67	H. G
				C. Fe
H. Beghin et G. Julia.	Exercices de mécanique. I, 1 ; II, 2. {2}.	J. Williams.	206	M. F
Ram Behari and Hansraj Gupta.	An introduction to the theory of equations.	P. M. Hunt.	151	G. F
S. Bergman.	The kernel function and conformal mapping.	H. G. Eggleston.	280	E. G
E. W. Beth.	Les fondements logiques des mathématiques.	R. L. Goodstein.	143	R. G
W. Blaschke.	Einführung in die Differentialgeometrie.	J. A. Todd.	136	H. J
S. Bochner and K. Chandrasekharan.	Fourier transforms.	J. L. B. Cooper.	140	A. G
G. Bol.	Elemente der analytischen Geometrie. I. II.	D. B. Scott.	138	R. J
	Projektive Differentialgeometrie. I.	E. T. Davies	210	S. H

INDEX

vii

PAGE	AUTHOR.	TITLE.	REVIEWER.	PAGE.
24	B. Bolzano.	Paradoxes of the infinite. Translated by D. E. Steele.	<i>T. J. Fletcher.</i>	205
24	G. Bouligand.	Les principes de l'analyse géométrique. IIA.	<i>D. B. Scott.</i>	150
19	M. E. Bowman.	Romance in arithmetic.	<i>Y. B. Giuseppei.</i>	270
11	H. Bremner.	See B. van der Pol.		
12	L. de Broglie.	Problèmes de propagation guidées des ondes electromagnétiques.	<i>J. C. S. Richards.</i>	224
10	R. C. Brown.	Mechanics and properties of matter.	<i>J. Topping.</i>	145
4	K. R. Buch.	See N. Arley.		
12	J. Chance and G. F. Sims.	Basic mathematics of technology. I.	<i>E. J. Atkinson.</i>	297
4	K. Chandrasekharan	See S. Bochner.		
4	G. R. Clements and L. T. Wilson.	Analytical and applied mechanics. {3}.	<i>J. Williams.</i>	296
26	R. G. Cooke.	Infinite matrices and sequence spaces.	<i>P. Vermes.</i>	277
24	E. T. Copson.	See B. B. Baker.		
	W. E. Deming.	Some theory of sampling.	<i>J. Wishart.</i>	289
	M. Y. Deshpande.	Model papers in algebra.	<i>B. A. Swinden.</i>	298
	A. Duschek.	Vorlesungen über höhere Mathematik. II.	<i>T. A. A. B.</i>	221
PAGE	A. Duschek und A. Hochrainer.	Grundzüge der Tensorrechnung in analytischer Darstellung. II.	<i>H. S. Ruse.</i>	69
22	A. Einstein.	The meaning of relativity. {4}.	<i>W. H. McCrea.</i>	127
	Ky Fan.	Les fonctions définies-positives et les fonctions complètement monotones.	<i>J. L. B. Cooper.</i>	201
28	W. Feller.	An introduction to probability theory and its applications. I.	<i>B. C. Brookes.</i>	216
26	R. A. Fisher.	Contributions to mathematical statistics.	<i>J. Wishart.</i>	215
15	H. G. Forder.	Geometry.	<i>D. Pedoe.</i>	212
6	C. Fox.	An introduction to the calculus of variations.	<i>P. J. Hilton.</i>	208
	M. Fréchet.	Recherches théoriques modernes sur le calcul des probabilités. I. {2}.	<i>B. C. Brookes.</i>	291
20		Leçons de statistique mathématique. II. IV.	<i>B. C. Brookes.</i>	291
15	G. Fuller.	Plane trigonometry.	<i>S. Inman.</i>	147
28	E. Galois.	Oeuvres mathématiques. {2}.	<i>T. A. A. B.</i>	202
	R. Garnier.	Cours de cinématique. III.	<i>T. J. Willmore.</i>	263
14	H. J. Gay.	Analytic geometry and calculus.	<i>P. M. Hunt.</i>	265
	A. G. Ghaffari.	The hodograph method in gas dynamics.	<i>L. Rosenhead.</i>	297
13	R. J. Gillings.	Graphs. {2}.	<i>A. W. Siddons.</i>	146
	S. H. Glenister.	Technical drawing for schools. I. II.	<i>F. T. Davies.</i>	273
14	H. Goldstein.	Classical mechanics.	<i>L. Rosenhead.</i>	66
13	I. J. Good.	Probability and the weighing of evidence.	<i>S. Vajda.</i>	124
	W. Gröbner und N. Hofreiter.	Integraltafel. II.	<i>T. A. A. B.</i>	221

AUTHOR.	TITLE.	REVIEWER.	PAGE
G. Guinier.	Éléments de physique moderne théorique. I.	<i>W. H. McCrea.</i>	145
P. R. Halmos.	Measure theory.	<i>J. L. B. Cooper.</i>	142
Hansraj Gupta.	See Ram Behari.		
M. C. Hartley.	See D. Skolnik.		
D. R. Hartree.	Calculating instruments and machines.	<i>S. Vajda.</i>	71
H. Hasse.	Zahlentheorie.	<i>L. J. Mordell.</i>	52
H. A. Hayden.	See H. V. Lowry.		
E. Hecke.	Vorlesungen über die Theorie der algebraischen Zahlen. (Rep.)	<i>J. W. S. Cassels.</i>	295
D. Hilbert and W. Ackermann.	Principles of mathematical logic.	<i>R. L. Goodstein.</i>	293
R. Hill.	The mathematical theory of plasticity.	<i>A. E. Green.</i>	208
T. H. W. Hill.	Mathematics for modern schools. IV.	<i>S. Inman.</i>	271
A. Hochrainer.	See A. Duschek.		
J. E. Hofmann.	Die Entwicklungs-Geschichte der Leibnizischen Mathematik.	<i>H. W. Turnbull.</i>	197
N. Hofreiter.	See W. Gröbner.		
L. Hogben.	Chance and choice by cardpack and chess-board. I.	<i>B. C. Brookes.</i>	129
H. Hornich.	Lehrbuch der Funktionentheorie.	<i>R. Cooper.</i>	132
P. Humbert.	See N. W. McLachlan.		
G. and R. C. James.	Mathematics dictionary. {2}.	<i>J. H. Pearce.</i>	127
K. Jellinek.	Verständliche Elemente der Wellenmechanik. I.	<i>R. A. Buckingham.</i>	207
N. L. Johnson and H. Tetley.	Statistics: an intermediate text-book. II.	<i>H. Freeman.</i>	290
B. W. Jones.	The arithmetic theory of quadratic forms.	<i>J. W. S. Cassels.</i>	214
C. Jordan.	Calculus of finite differences. {2}.	<i>C. W. Jones.</i>	293
G. Julia.	See H. Beghin.		
E. Kasner and J. Newman.	Mathematics and the imagination.	<i>H. W. Turnbull.</i>	199
M. G. Kendall.	See G. U. Yule.		
J. J. de Kock and A. J. van Zyl.	New junior mathematics.	<i>K. S. Snell.</i>	126
J. F. Koksma.	Diophantische Approximationen. (Rep.)	<i>J. W. S. Cassels.</i>	295
A. N. Kolmogorov.	Foundations of the theory of probability.	<i>B. C. Brookes.</i>	292
D. König.	Theorie der endlichen und unendlichen Graphen. (Rep.)	<i>L. S. Goddard.</i>	296
C. Lanczos.	The variational principles of mechanics.	<i>G. J. Whitrow.</i>	62
E. Landau.	Differential and integral calculus. (Trans.)	<i>T. A. A. B.</i>	218
	Foundations of analysis. (Trans.)	<i>T. A. A. B.</i>	294
	Einführung in die elementare und analytische Theorie der algebraischen Zahlen und der Ideale. (Rep.)	<i>J. W. S. Cassels.</i>	295

INDEX

ix

PAGE	AUTHOR.	TITLE.	REVIEWER.	PAGE.
145	A. Landé.	Quantum mechanics.	<i>P. T. Landsberg.</i>	286
142	D. E. Littlewood.	The skeleton key of mathematics.	<i>H. W. Turnbull.</i>	135
		The theory of group characters and the matrix representation of groups. (2).	<i>T. A. A. B.</i>	151
71	G. Loria.	Storia delle matematiche dall'alba della civiltà al secolo XIX. (2).	<i>F. P. White.</i>	147
52	H. V. Lowry and H. A. Hayden.	Advanced mathematics for technical students. II.	<i>J. H. Pearce.</i>	285
295	P. E. Machovina.	A manual for the slide rule.	<i>J. E. Blamey.</i>	300
293	A. E. E. McKenzie.	A second course of mechanics and properties of matter.	<i>J. Topping.</i>	269
208	N. W. McLachlan.	Ordinary non-linear differential equations in engineering and physical sciences.	<i>G. E. H. Reuter.</i>	282
271	N. W. McLachlan et P. Humbert.	Formulaire pour le calcul symbolique. (2).	<i>T. A. A. B.</i>	202
197	N. W. McLachlan, P. Humbert et L. Poli.	Supplément au formulaire pour le calcul symbolique.	<i>T. A. A. B.</i>	202
129	E. Madelung.	Die mathematischen Hilfsmittel des Physikers. (4).	<i>I. N. Sneddon.</i>	67
132	W. Meyer zur Capellen.	Integraltafeln.	<i>R. B. Harvey.</i>	133
127	W. Michael.	Ortskurvengeometrie in der komplexen Zahlenebene.	<i>F. Bowman.</i>	204
207	S. Narayan.	A course of mathematical analysis. (2).	<i>P. M. Hunt.</i>	151
	J. von Neumann.	Functional operators.	<i>J. L. B. Cooper.</i>	141
290	J. Newman.	See E. Kasner.		
214	A. Page.	Trigonometry.	<i>B. A. Swinden.</i>	298
293	H. E. Parr.	School mathematics. II.	<i>H. Berry.</i>	272
	O. Perron.	Irrationalzahlen. (2, rep.)	<i>J. H. Pearce.</i>	295
199	G. Pickert.	Einführung in die höhere Algebra.	<i>W. Ledermann.</i>	284
	B. van der Pol and H. Bremner.	Operational calculus.	<i>S. Vajda.</i>	279
126	L. Poli.	See N. W. McLachlan.		
295	H. Pollard.	The theory of algebraic numbers.	<i>J. W. S. Cassels.</i>	213
292	D. Ponton.	The Knowall maths. I. II.	<i>Y. B. Giuseppi.</i>	300
296	A. Porter.	An introduction to servo-mechanisms.	<i>B. M. Brown.</i>	273
	M. H. Quenouille.	Introductory statistics.	<i>F. Sandon.</i>	287
62	J. F. Ritt.	Differential algebra.	<i>D. Rees.</i>	137
218	W. W. Rogosinski.	Fourier series (Trans.).	<i>T. A. A. B.</i>	218
	L. Roy.	Cours de mécanique rationnelle. IV.	<i>J. Williams.</i>	144
294	A. C. Schaeffer and D. C. Spencer.	Coefficient regions for schlicht functions.	<i>H. G. Eggleston.</i>	281
295	R. Schatten.	A theory of cross-spaces.	<i>P. J. Hilton.</i>	222
	A. Schild.	See J. L. Synge.		
	E. Schrödinger.	Space-time structure.	<i>W. H. McCrea.</i>	205

AUTHOR	TITLE.	REVIEWER.	PAGE
C. L. Siegel.	Transcendental numbers.	<i>L. J. Mordell.</i>	56
G. F. Sims.	<i>See J. Chance.</i>		
D. Skolnik and M. C. Hartley.	Dynamic plane geometry.	<i>C. V. Durell.</i>	263
D. C. Spencer.	<i>See A. C. Schaeffer.</i>		
J. F. Steffensen.	Interpolation. (Rep.)	<i>T. A. A. B.</i>	294
H. Steinhaus.	Mathematical snapshots. (2).	<i>T. A. A. B.</i>	210
D. J. Struik.	Lectures on classical differential geometry.	<i>J. A. Todd.</i>	136
K. B. Swaine.	Exercises in elementary mathematics. II.	<i>E. J. Atkinson.</i>	271
J. L. Synge and A. Schild.	Tensor calculus.	<i>G. J. Whitrow.</i>	64
H. Tetley.	<i>See N. L. Johnson.</i>		
H. Tietze.	Gelöste und ungelöste mathematische Probleme aus alter und neuer Zeit.	<i>L. S. Goddard.</i>	283
O. Toeplitz.	Die Entwicklung der Infinitesimalrechnung. I.	<i>R. L. Goodstein.</i>	68
F. Tolke.	Praktische Funktionenlehre. I. (2).	<i>T. A. A. B.</i>	220
J. D. Trimmer.	Response of physical systems.	<i>B. M. Brown.</i>	273
N. Tschebotarow.	Grundzüge der Galois'schen Theorie.	<i>W. Ledermann.</i>	134
G. Verriest.	Evariste Galois et la théorie des équations algébriques. (2).	<i>T. A. A. B.</i>	202
J. Versluys.	Boldrieboeksmeting. (10). Revised by P. Wijdenes.	<i>J. E. Blamey.</i>	268
B. L. van der Waerden.	Moderne Algebra. I. (3).	<i>G. A. Dirac.</i>	203
R. Walker.	Analytical geometry.	<i>E. A. Maxwell.</i>	218
R. J. Walker.	Algebraic curves.	<i>D. Pedoe.</i>	212
J. L. Walsh.	The location of critical points of analytic and harmonic functions.	<i>H. G. Eggleston.</i>	203
W. G. Welchman.	Introduction to algebraic geometry.	<i>D. Pedoe.</i>	211
H. Weyl.	Philosophy of mathematics and natural science. (Revised English edition.)	<i>P. T. Landsberg.</i>	58
P. Wijdenes.	Leerboek der goniometrie en trigonometrie. (7).	<i>J. E. Blamey.</i>	268
	<i>See also J. Versluys.</i>		
R. L. Wilder.	Topology of manifolds.	<i>G. Higman.</i>	136
L. T. Wilson.	<i>See G. R. Clements.</i>		
G. U. Yule and M. G. Kendall.	Introduction to the theory of statistics. (14).	<i>B. C. Brookes.</i>	131
H. Zassenhaus.	The theory of groups. (Rep.)	<i>T. A. A. B.</i>	295
R. Zurmühl.	Matrizen: eine Darstellung für Ingenieure.	<i>A. C. Aitken.</i>	219
C. Zwikker.	Advanced plane geometry.	<i>T. A. A. B.</i>	124
A. J. van Zyl.	<i>See J. J. de Kock.</i>		
Algèbre et théorie des nombres.		<i>K. A. Hirsch.</i>	281

INDEX

xi

PAGE	TITLE	REVIEWER.	PAGE.
56	Analyse harmonique.	<i>J. L. B. Cooper.</i>	143
	Chambers's shorter six-figure mathematical tables. Compiled by L. J. Comrie.	<i>T. A. A. B.</i>	267
263	Colloque de géométrie algébrique.	<i>L. S. Goddard.</i>	139
	Contributions to the theory of non-linear oscillations.	<i>G. E. H. Reuter.</i>	282
294	Contributions to Fourier analysis.	<i>J. C. Burkill.</i>	281
210	Electromagnetic theory.	<i>C. A. Coulson.</i>	149
136	Études de philosophie des sciences.	<i>R. L. Goodstein.</i>	267
	Professional opportunities in mathematics.	<i>J. T. Combridge.</i>	299
271	Rinehart's mathematical tables, compiled by H. D. Larsen.	<i>S. Inman.</i>	148
	Sixth-Form Citizens.	<i>W. F. Bushell.</i>	60
64	Jacob Steiner's geometrical constructions with a ruler. Translated by M. E. Stark, edited by R. C. Archibald.	<i>L. S. Goddard.</i>	149
283	Film strips.	<i>I. R. Vesselo.</i>	152

NEWS OF BRANCHES.

	PAGE.		PAGE.
134	Birmingham University	Queensland	ix
202	Leicestershire	Southampton	xiii
	Liverpool	Victoria	ix
268	New South Wales		v

GLEANINGS FAR AND NEAR.

PAGE.	No.	PAGE.	No.	PAGE.	No.
7	1656	36	1663	104	1672-5
211	8 1657-9	51	1664	182	1676-80
58	18 1660-1	79	1665-8	238	1681
	28 1662	96	1669-71	262	1682

CORRESPONDENCE.

131	M. Hutton.	Laplace transforms.	303
	F. G. Maunsell.	Car wheels.	303
295	S. Melmore.	Polyhedron nomenclature.	301
219	D. A. Quadling.	Units in dynamics.	303
	F. Sandon.	Printing contractions.	302
124	A. W. Siddons.	Units in dynamics.	302

MISCELLANEOUS.

	PAGE
Bureau for the solution of problems.	18, 107, 196
Edinburgh Mathematical Society Colloquium.	22, xiii
Mathematics at the Festival.	74
Summer School in relaxation methods.	88
<i>Pi Mu Epsilon Journal.</i>	v
<i>Mathematical Pie.</i>	vi
<i>Liverpool University Mathematical Magazine.</i>	vi
Notice of Annual Meeting, 1952.	ix

PLATES.

	PAGE
<i>De Arte Supputandi.</i>	1
H. R. Hassé.	153

NEWS OF BRANCHES

i

February, 1951

WANTED.

Dienes: *The Taylor Series.*

Kestelman: *Modern Theories of Integration.*

Eagle: *Fourier's Theorem and Harmonic Analysis.*

Silberstein: *Synopsis of Applicable Mathematics.*

Watson: *Complex integration and Cauchy's theorem.*

Members having copies and wishing to dispose of them please write to

CLIFFORD MARBURGER, Denver, Pennsylvania, U.S.A.

Payment in advance.

THE LIVERPOOL MATHEMATICAL SOCIETY.

(LIVERPOOL BRANCH OF THE MATHEMATICAL ASSOCIATION.)

Report for the Session 1949-50.

Officers.—President, Mr. E. D. Camier; Vice-President, Miss J. S. Batty; Secretary, Mr. J. Kershaw; Treasurer, Mr. L. Sowerby; Auditor, Miss W. Taylor; Committee: Mr. W. F. Bushell, Mr. S. D. Daymond, Dr. C. W. Jones, Miss A. E. Leake, Mr. A. T. F. Nice, Miss W. Taylor, (*Ex-officio*) Professor J. M. Whittaker.

Activities. The Society held six meetings, all well attended, and each only concluded after vigorous discussion. During the course of the Session we were happy to welcome over 20 new members, the final number on the roll being 95. Once again the Society received a food parcel from the Victoria, Australia, Branch of the Association. We appreciate the generosity and kindness which inspired this gift, and would extend both our thanks and most sincere good wishes to our mathematical friends of the Victoria Branch. The Society's Mathematical Prize for 1949-50 was awarded to Mr. T. Murphy.

Abstracts of Lectures.

17th October, 1949. "How to Doodle"; Dr. J. Bronowski. Dr. Bronowski, having suggested that an analysis of this craft—so widespread in all committees of the present day, was long overdue, classified those doodles made without lifting the pen or retracing lines into various different types. Having obtained the necessary and sufficient conditions for their traceability, the speaker added some extensions to the results obtained in this field by Euler, and showed that certain doodles when dualised led to easy solutions of a number of topological puzzles.

7th November, 1949. "H.S.C. Performances in Arts and in Sciences"; Mr. J. A. Petch, Secretary of the Joint Matriculation Board. The speaker analysed statistically the performances of those 1947 H.S.C. candidates who offered three principal subjects and again offered each the same three subjects in 1948. From this analysis it appeared that not only did the aggregate marks of Science candidates on the first occasion run at a higher level than those offering Arts, but that at the second attempt the advantage of the Science candidates was even more marked.

5th December, 1949. Presidential Address: "Non-Euclidean Geometry"; Mr. E. D. Camier, Birkenhead School. Mr. Camier described the work of Gauss, Bolyai and Lobachewsky, who were the first to realise the independence of Euclid's Parallel Postulate from his other definitions and postulates, and to develop a logically consistent geometry based on a hypothesis contradicting Euclid's. A brief account of the more interesting features of this geometry was followed by a sketch of its later history and its relation to the geometry of physical space.

23rd January, 1950. "Mathematics in the Modern School"; Mrs. E. M. Williams, Principal, City of Leicester Training College. A child's mathematical studies, Mrs. Williams suggested, should be rooted in its own needs, and should lead it from symbolism and formulae to the accurate use of language and a respect for precision and truth. Powers of generalisation and abstraction could be developed, and, most importantly, the power to perceive relationships. The proposed syllabus was illustrated by examples drawn from problems confronting the child in everyday life.

27th February, 1950. "Recent Trends in the School Teaching of Geometry"; Mr. A. Robson. Outlining the content of a typical school mathematical syllabus of the early part of this century, Mr. Robson discussed the defects of Euclid for the feeble pupil, and how the unimportant distinction between pure and analytical methods in conics was laboured whilst the important distinction between metrical and projective methods was neglected. Duality and Salmon's use of abridged notation were left until too late. A number of problems solved by alternative methods were used to support Mr. Robson's thesis.

22nd May, 1950. Annual General Meeting. The election of Officers for the 1950-51 Session and a short business meeting were followed by an address—"Actuarial Mathematics"—given by Mr. G. Heywood, of Messrs. Duncan Fraser & Co., Liverpool. Mr. Heywood first explained the H.M. (Makeham Graduation) Table, and derived an expression for the Annual Premium for a £100 Whole-Life Assurance Policy. More recent Tables were then mentioned, and the speaker detailed much of the procedure used by an actuary when making a valuation for an assurance company.

BIRMINGHAM UNIVERSITY MATHEMATICAL ASSOCIATION.

REPORT FOR 1950.

DURING the early months of the year numbers attending meetings decreased, but several interesting lectures were enjoyed by those present. "The Theory of Evaporating Stars" and "The Mathematical Theory of Puzzles", both appropriately illustrated, were the most outstanding ones. As in the past few years, staff and student members of the Society met on one occasion to discuss the Honours syllabus, and much was said, with deep feeling, by both sides.

A visit to Cadbury's Works proved interesting and enjoyable. The other works visit arranged for Austin's was unavoidably cancelled.

The only meeting in the summer term was the Annual General Meeting, when new officers and committee were elected and the progress of the Society surveyed in the Secretary's report. Arrangements were made for organised recreational activities during the post-examination weeks in June.

The new session started well in October by having more than 90 staff and students present at the Freshers' Tea. A further welcome was extended to the freshers by a social evening attended by 80 members and friends.

The Presidential Address was traditionally non-mathematical, and gave us an insight to life in foreign universities in pre-war days.

Lectures have also been given on "Football Pools", the "Life and work of Ramanujan" and the "Klumpen Theorie", all of which have proved extremely interesting and often amusing.

A further visit to Cadbury's was arranged for early December on account of the popularity of the former visit.

Attendance at meetings has been somewhat higher than in previous years:

BOOKS RECEIVED FOR REVIEW

iii

approximately 70 members and friends have been present for all meetings in the Autumn Term, excepting the one immediately before examination week.

Membership cards have been obtained for the second half of the present session, and it is hoped that this practice will be continued for the whole of future sessions.

So far the Society has over 60 official members from staff and students, and several others regularly attend meetings.

BOOKS RECEIVED FOR REVIEW.

L. Bierberbach. *Einführung in die analytische Geometrie*. 4th edition. Pp. 168. DM. 8.90. 1950. (Verlag für Wissenschaft, Bielefeld)

K. Camp. *The Whittaker-Henderson graduation process*. Pp. 47. \$1. 1950. (Published by the author, New York)

A. Charrueau. *Sur des congruences de droites ou de courbes et sur une transformation de contact liée à ces congruences*. Pp. 72. 500 fr. 1950. *Mémorial des sciences mathématiques*, 115. (Gauthier-Villars)

R. G. Cooke. *Infinite matrices and sequence spaces*. Pp. xiii, 347. 42s. 1950. (Macmillan)

D. B. Delury. *Values and integrals of the orthogonal polynomials up to $n=26$* . Pp. 33. 9s. 6d. 1950. (University of Toronto Press; Geoffrey Cumberlege, Oxford University Press)

Ky Fan. *Les fonctions définies-positives et les fonctions complètement monotones*. Pp. 47. 400 fr. 1950. *Mémorial des sciences mathématiques*, 113. (Gauthier-Villars)

R. A. Fisher. *Contributions to mathematical statistics*. A collection of 43 papers. 60s. 1950. (John Wiley, New York; Chapman and Hall)

C. Fox. *An introduction to the calculus of variations*. Pp. viii, 271. 21s. 1950. (Geoffrey Cumberlege, Oxford University Press)

M. Fréchet. *Généralités sur les probabilités. Éléments aléatoires*. 2nd edition. Pp. xvi, 355. 1950. *Traité du calcul des probabilités*, I, 3, i. (Gauthier-Villars)

M. Fréchet. *Leçons de statistique mathématique*. Cahiers 2, 4. Pp. 52, 168. 1950. (Centre de Documentation Universitaires, Paris)

S. H. Glenister. *Technical drawing for schools*. I, II. Pp. 128 each. 5s. each. 1950. (Harrap)

G. Guinier. *Éléments de physique moderne théorique*. II. Pp. 161-309. 1950. (Bordas, Paris)

K. Jellinek. *Weltsystem, Weltäther und die Relativitätstheorie*. Pp. xv, 450. Sw. fr. 45. 1950. (Wepf, Basel)

N. L. Johnson and H. Tetley. *Statistics: an intermediate text-book*. II. Pp. xi, 318. 20s. 1950. (Cambridge University Press)

B. W. Jones. *The arithmetic theory of quadratic forms*. Pp. x, 212. 24s. 1950. *Carus mathematical monographs*, 10. (Mathematical Association of America; John Wiley, New York; Chapman and Hall)

E. Landau. *Differential and integral calculus*. Translated by M. Hausner and M. Davis. Pp. 366. \$4.50. 1950. (Chelsea Publishing Company, New York)

T. Levi-Civita. *Le problème des n corps en relativité générale*. Pp. 111. 800 fr. 1950. *Mémorial des sciences mathématiques*, 116. (Gauthier-Villars)

H. V. Lowry and H. A. Hayden. *Advanced mathematics for technical students*. II. Pp. ix, 422. 18s. 1950. (Longmans)

P. E. Machovina. *A manual for the slide rule*. Pp. 78. 6s. 6d. 1950. (McGraw-Hill)

A. E. E. McKenzie. *A second course of mechanics and properties of matter*. Pp. viii, 232. 11s. 6d. 1950. (Cambridge University Press)

N. W. McLachlan et P. Humbert. *Formulaire pour le calcul symbolique*. 2nd edition. Pp. 65. 350 fr. 1950. *Mémorial des sciences mathématiques*, 100. (Gauthier-Villars)

- ✓ N. W. McLachlan, P. Humbert et L. Poli. *Supplément au formulaire pour le calcul symbolique*. Pp. 59. 450 fr. 1950. *Mémoires des sciences mathématiques*, 113. (Gauthier-Villars)
- W. Michael. *Ortskurvengeometrie in der komplexen Zahlenebene*. Pp. 93. Sw. fr. 11.50. 1950. (Birkhäuser, Basel)
- F. Neiss. *Analytische Geometrie*. Pp. viii, 167. DM. 9.60. 1950. (Springer, Berlin)
- G. Pickert. *Einführung in die höhere Algebra*. Pp. 298. DM. 12.80; geb. DM. 14.80. 1950. *Studia Mathematica*, 7. (Vandenhoeck und Ruprecht, Göttingen)
- ✓ B. van der Pol and H. Bremmer. *Operational calculus based on the two-sided Laplace integral*. Pp. xiii, 415. 55s. 1950. (Cambridge University Press)
- ✓ H. Pollard. *The theory of algebraic numbers*. Pp. xii, 143. 24s. 1950. *Carus mathematical monographs*, 9. (Mathematical Association of America; John Wiley, New York; Chapman and Hall)
- D. Ponton. *The Knoll Maths. I. II*. 7s. 6d.; 10s. 1950. (D. Ponton, 11 Churchfield Road, Poole, Dorset)
- A. Porter. *An introduction to servo-mechanisms*. Pp. vi, 154. 7s. 6d. 1950. (Methuen)
- ✓ W. W. Rogosinski. *Fourier series*. Translated by H. Cohn and F. Steinhardt. Pp. vi, 171. \$2.50. 1950. (Chelsea Publishing Company, New York)
- M. Roy. *Mécanique des milieux continus et déformables. I. II*. Pp. xxii, 366; xii, 338. 2800 fr.; 2300 fr. 1950. (Gauthier-Villars)
- ✓ R. Schatten. *A theory of cross-spaces*. Pp. vi, 153. 16s. 1950. *Annals of Mathematics Studies*, 26. (Princeton University Press; Geoffrey Cumberlege, Oxford University Press)
- H. Schwerdtfeger. *Introduction to linear algebra and the theory of matrices*. Pp. 280. 15 fl.; cloth 17.50 fl. 1950. (Noordhoff, Gröningen)
- D. Skolnik and M. C. Hartley. *Dynamic plane geometry*. Pp. xii, 289. \$2.56; 18s. 1950. (Van Nostrand, New York; Macmillan)
- ✓ H. Steinhaus. *Mathematical snapshots*. 2nd edition. Pp. vi, 266. 27s. 6d. 1951. (Geoffrey Cumberlege, Oxford University Press)
- K. B. Swaine. *Exercises in elementary mathematics. III*. Pp. 254. 7s. 6d. 1950. (Harrap)
- H. Tietze. *Gelöste und ungelöste mathematische Probleme aus alter und neuer Zeit. I. II*. Pp. xx, 256; 305. DM. 18; geb. DM. 25. 1949. (Biederstein, München)
- ✓ F. Tölke. *Praktische Funktionlehre. I. Elementare und elementare transzendente Funktionen*. 2nd edition. Pp. xi, 440. DM. 39. 1950. (Springer, Berlin)
- ✓ J. D. Trimmer. *Response of physical systems*. Pp. ix, 268. 40s. 1950. (John Wiley, New York; Chapman and Hall)
- P. Wijdenes. *Boldriehoeksmeting*. 10th edition. Pp. 298. 9.50 fl.; bound, 11.50 fl. 1950. (Noordhoff, Gröningen)
- P. Wijdenes. *Léerboek der goniometrie en trigonometrie*. 7th edition. Pp. 363. 13 fl. bound. 1950. (Noordhoff, Gröningen)
- ✓ Contributions to Fourier series. (A. Zygmund, W. Transue, M. Morse, A. P. Calderon, S. Bochner.) Pp. 188. 20s. 1950. *Annals of Mathematics Studies*, 25. (Princeton University Press; Geoffrey Cumberlege, Oxford University Press)
- Œuvres mathématiques d'Évariste Galois*. 2nd edition. Suivies d'une notice sur Galois par G. Verriest. Pp. x, 61, 56. 300 fr. 1951. (Gauthier-Villars)

May, 1951

NEW SOUTH WALES BRANCH

REPORT FOR 1950.

There are now 464 members of this Branch; the number has steadily grown since the publication of the *Australian Mathematics Teacher*.

During the year the following meetings were held and addresses given:

1. Discussion of mathematical papers set for the L.C.E., 1949.

2. Mr. B. N. Farlow: "Let us face the facts about mathematics in schools."

Mr. Farlow's remarks were based upon investigations made in some of the primary as well as some secondary schools in one district of N.S. Wales.

3. Mr. H. H. Thorne: "On the invention of logarithms by Napier of Merchiston."

4. Mr. J. L. Williams: "On the work of the Council of the Mathematical Association."

5. Annual Meeting: reports were received from the Hon. Secretaries, the Hon. Treasurer, the Problems Bureau, the *Gazette* Secretary and the Editorial Committee. For the Presidential Address, delivered at this meeting, the retiring President, Mr. W. B. Smith-White, spoke about "Some functions in the curriculum of school mathematics, and their relationships". Mr. Smith-White spoke about the trigonometrical, exponential and logarithmic functions. A different approach from that usually adopted in schools and in most current texts was advocated; and in particular it was shown how the school course in the calculus could be adapted to throw light on the nature of these functions.

The reports showed that the work of the Branch is proceeding in a satisfactory way. Meetings are usually well attended, and discussion of papers has been stimulating. The financial position is satisfactory; but rising costs demand that great care and watchfulness are exercised in connection with the publication of the Branch's journal. One very encouraging feature about this project is the good support given by teachers outside N.S. Wales, particularly from the other Australian states and New Zealand.

Most of the present office-bearers were re-elected for the year 1951, with the exception that Mr. Smith-White retired from the position of President, and Mr. P. N. Andersen was elected to fill that position. It was also decided to provide for extra secretarial assistance, and Mr. B. N. Farlow was made Publicity Secretary. The Problems Bureau each year has a steady stream of questions presented to it for solution. Many members have expressed themselves as grateful for the assistance they have obtained. The distribution of the *Mathematical Gazette* has proceeded satisfactorily.

The editorial work of the *Australian Mathematics Teacher* necessarily demands considerable thought, and consumes a great deal of time. It has not been possible to publish at once, nor always in full, all the material that has been offered, because of lack of printing space; and until costs are reduced, it will not be possible to increase the size of the journal.

I. D. BARNES } Joint Hon. Secretaries.
H. J. MELDRUM }

PI MU EPSILON JOURNAL

THE organisation and functions of the fraternities of the universities of the United States are not always well understood in this country. But the aims of the Pi Mu Epsilon fraternity, primarily the advancement of mathematics by the co-operation of responsible and competent scholars enlisted from the senior undergraduates, must be endorsed by all of us. This fraternity was

founded on its present basis by the astronomer E. D. Roe, for many years Professor at Syracuse University, and he envisaged that when it became a national organisation with chapters in the leading universities and colleges of America, there would be a desire and a need for a fraternity journal. Such a journal has now been started, with Professor Ruth W. Stokes of Syracuse as editor, and three numbers have so far appeared. A part of each is naturally devoted to fraternity matters, but there are interesting short articles, problems to be solved, and a feature which is similar to the "Gleanings" of the *Gazette*, the flavour of which may be appreciated by the following example extracted from No. 3:

$$\left(\frac{1}{2}\right)^3 < \left(\frac{1}{2}\right)^2.$$

Take logarithms to base $\frac{1}{2}$

$$3 \log_{\frac{1}{2}} \frac{1}{2} < 2 \log_{\frac{1}{2}} \frac{1}{2}.$$

But $\log_{\frac{1}{2}} \frac{1}{2} = 1$. Hence $3 < 2$.

We wish the new journal every success. Details and subscription rates can be had from H. C. Bennett, 15 Smith Hall, Syracuse University, Syracuse 10, N.Y.

MATHEMATICAL PIE

Mathematical Pie, the journal emanating from the Gateway School, Leicester, has just issued its second number. The attention of all teachers is directed to this little periodical, price 2d., for it has matter to suit all tastes, and is cheap enough to be within the pockets of many school children. The editor is Mr. R. H. Collins, The Gateway School, Leicester, from whom further particulars can be obtained.

LIVERPOOL UNIVERSITY MATHEMATICAL MAGAZINE

THE Mathematical Society of the University of Liverpool, a branch of the Mathematical Association, whose membership is made up of both staff and students, is producing a new periodical, the contents of which are of general scientific interest, with a strong leaning towards mathematics. Both staff and students have contributed to the first number, which will consist of about 20 to 24 pages, price 1s. 6d.

BOOKS RECEIVED FOR REVIEW.

P. Appell. *Analyse mathématique. I. II.* 6th edition, completely revised by G. Valiron. Pp. ix, 408; 434. 2000 f.; 2200 fr. 1951. (Gauthier-Villars)

H. Beghin et G. Julia. *Exercices de mécanique. I, 1.* 2nd edition. Pp. vii, 337. 1946. (Gauthiers-Villars)

S. Bergman. *The kernel function and conformal mapping.* Pp. vii, 161. \$4. 1950. *Mathematical Surveys*, 5. (American Mathematical Society)

E. E. Biggs and H. E. Vidal. *Mathematics today. I. The world we live in.* Pp. xiii, 322. 6s. 6d. 1951. (Ginn)

L. de Broglie. *Problèmes de propagations guidées des ondes électromagnétiques.* 2nd edition. Pp. 118. 1100 fr. 1951. (Gauthier-Villars)

G. R. Clements and L. T. Wilson. *Analytical and applied mechanics.* 3rd edition. Pp. xi, 463. 47s. 1951. (McGraw-Hill)

M. Y. Deshpande. *Model papers in algebra.* Pp. iv, 216. Rs. 3. (High School, Poona, 2)

G. Doetsch. *Handbuch der Laplace-Transformation. I.* Pp. 581. Sw. fr. 74; geb. Sw. fr. 78. 1950. (Birkhäuser, Basel)

A. Duschek. *Vorlesungen über höhere Mathematik. II.* Pp. vi, 386. 44s. 6d.; bound, 49s. 1950. (Springer, Vienna)

BOOKS RECEIVED FOR REVIEW

vii

- A. G. Ghaffari. *The hodograph method in gas dynamics*. Pp. iv, 129. N.p. 1950. (Taban Press, Tehran)
- W. Gröbner and N. Hofreiter. *Integraltafel. II. Bestimmte Integrale*. Pp. vi, 204. 41s. 1950. (Springer, Vienna)
- H. Hasse. *Vorlesungen über Zahlentheorie*. Pp. xii, 474. DM 42; geb. DM 45. 1950. Grundlehren der mathematischen Wissenschaften, 59. (Springer, Berlin)
- H. Hasse. *Höhere algebra. I. II*. 3rd edition. Pp. 152, 158. DM 2.40 each. 1951. Sammlung Götschen, 931, 932. (Walter de Gruyter, Berlin)
- D. Hilbert and W. Ackermann. *Principles of mathematical logic*. Translated by L. M. Hammond, G. G. Leckie and F. Steinhardt. Edited, with notes, by R. E. Luce. Pp. xii, 172. \$3.50. 1950. (Chelsea Co., New York)
- C. Jordan. *Calculus of finite differences*. 2nd edition. Pp. xxi, 652. \$5.50. 1950. (Chelsea Co., New York)
- A. N. Kolmogorow. *Foundations of the theory of probability*. Translated by N. Morrison. Pp. viii, 71. \$2.50 1950. (Chelsea Co., New York)
- D. König. *Theorie der endlichen und unendlichen graphen* (Rep.). Pp. 258. \$3.95. 1950. (Chelsea Co., New York)
- E. Landau. *Foundations of analysis*. Translated by F. Steinhardt. Pp. xiv, 134. \$2.75. 1951. (Chelsea Co., New York)
- A. Landé. *Quantum mechanics*. Pp. x, 307. 40s. 1951. (Pitman)
- D. E. Littlewood. *A university algebra*. Pp. viii, 292. 21s. 1950. (Heinemann)
- A. R. Low. *Normal elliptic functions*. Pp. 30. 9s. 6d. 1950. (Toronto University Press; Geoffrey Cumberlege, London)
- W. Maak. *Fastperiodische Funktionen*. Pp. viii, 240 DM 21.60; geb. DM 24.60. 1950. Grundlehren der mathematischen Wissenschaften, 61. (Springer, Berlin)
- W. Magnus and F. Oberhettinger. *Formulas and theorems for the special functions of mathematical physics*. Translated by J. Wermer. Pp. 172. \$3.50. 1949. (Chelsea Co., New York)
- A. Page. *Trigonometry*. Pp. viii, 276. 18s. 1951. (University of London Press)
- O. Perron. *Irrationalzahlen*. 2nd edition, rep. Pp. viii, 199. \$3.25. 1948. (Chelsea Co., New York)
- R. I. Porter. *Further elementary analysis*. Pp. xi, 306. 21s. 1951. (Bell)
- G. Y. Rainich. *Mathematics of relativity*. Pp. vii, 173. 28s. 1950. (Wiley, New York; Chapman & Hall)
- B. S. Ray. *Differential calculus*. Pp. ii, 246. Rs. 6/8. 1950. (Das Gupta, Calcutta)
- A. C. Schaeffer and D. C. Spencer. *Coefficient regions for schlicht functions*. Pp. xi, 311. \$6. 1950. American Mathematical Society Colloquium Publications, 35. (American Mathematical Society, New York)
- A. W. Siddons, K. S. Snell and J. B. Morgan. *A new calculus. I. II*. Pp. 116, 258. 5s., 10s. 6d. 1950. 1951. (Cambridge University Press)
- W. M. Smart. *The origin of the earth*. Pp. vi, 239. 12s. 6d. 1951. (Cambridge University Press)
- J. F. Steffensen. *Interpolation*. 2nd edition. Pp. ix, 248. \$3.50. 1950. (Chelsea Co., New York)
- D. Voelker und G. Doetsch. *Die zweidimensional Laplace-Transformation*. Pp. 259. Sw. fr. 39; geb. Sw. fr. 43. 1950. (Birkhäuser, Basel)
- W. Wilson. *The microphysical world*. Pp. vii, 216. 5s. 1951. (Methuen)
- H. Zassenhaus. *The theory of groups*. Translated by S. Kravetz. Pp. viii, 159. \$3.50 1949. (Chelsea Co., New York)
- Algèbre et théorie des nombres*. Pp. 224. 55s. 1950. Colloques internationaux, 24 (Centre National de la recherche scientifique, Paris; H. K. Lewis, London)
- Elasticity*. Third symposium in applied mathematics of the American Mathematical Society. Pp. v, 233. 51s. 1951. (McGraw-Hill)

Quantum Mechanics

By **Alfred Landé**

PROFESSOR OF PHYSICS, THE OHIO STATE UNIVERSITY

An authoritative exposition of the subject, of great interest and importance to all concerned with advanced physics and to students reading for Honours Degrees. The final chapter on the meson theory forms an introduction to the literature on nuclear forces.

40/- net.

Pitman, Parker Street, Kingsway, London, W.C.2



Third Edition, Revised and Enlarged Mechanics via the Calculus

By **P. W. NORRIS, M.A., B.Sc.**
and **W. SEYMOUR LEGGE, B.Sc.**

FAVOURED for many years for Pass Degree, Scholarship and Higher Certificate work, *Norris and Legge* is extended in its third edition by a chapter on Vector Analysis, many minor amendments and new examples. The worked examples in text and the 550 problems for solution (with answers) make it excellent for private study, and it is first rate value for money.

380 pp., 196 diags. 16s.

Mechanics: A New Introduction

By **L. W. F. ELEN, M.Sc.** and **R. MYERS, B.Sc.**

THE notable features of this text for ordinary General Certificate are the explicit style and the wealth of examples—nearly 1000 in all. The authors are respectively Senior Lecturer in Maths. at Coventry Technical College, and Head of the Maths. Department at Salford Royal Technical College.

310 pp. 242 diags. 7s. 6d.

Write for Inspection Copies to 42a S. Audley St., W.1

CLEAVER-HUME PRESS LTD.

September, 1951

ANNUAL MEETING, 1952.

THE Annual General Meeting of the Association will be held at the Polytechnic, Regent Street, London, W. 1, on Thursday, 3rd January, and Friday, 4th January, 1952.

The President, Dr. Mary L. Cartwright, F.R.S., will give the Presidential Address: "Non-linear Vibrations; a Recent Chapter in Mathematical History."

There will be a discussion on the principles and policy of the Association's Reports, and an hour of reminiscences to mark the jubilee of the first Teaching Committee.

Friday's business will include a discussion on the recent Calculus Report, and papers on vectors, pure geometry in engineering, and measuring and computing devices of interest to teachers in secondary schools.

QUEENSLAND BRANCH

REPORT FOR THE YEAR 1950-51.

THIS Branch held its thirtieth Annual Meeting on 18th May, 1951. Since the last Report, the Branch has lost through death one of its early members, Mr. I. Waddle, M.Sc.

The previous Annual Meeting was held at the University on 19th May, 1950. The Annual Report and Statement of Receipts and Expenses for the year were presented to the meeting and were adopted. After the election of officers, Mr. H. M. Finucan read a paper on "Mathematical Psychology": the usual Presidential Address was not given owing to the absence of the President, Professor Simonds.

Two general meetings have been held at the University during the year. At the first, on 14th August, Mr. E. W. Jones read a paper on "Applications of Curve Properties", and at the second, on 17th November, Mr. S. G. Brown opened a discussion on the recently issued Report of the Mathematical Association on *The Teaching of Trigonometry in Schools*.

The statement of receipts and expenses for the year shows a credit balance of £20 3s. 6d. The number of members of the Branch is 33, including one life member and 11 members of the Mathematical Association. The *Mathematical Gazette* is circulated among associate members as it comes to hand. The attendance at meetings has been quite good, and the thanks of members are due to those who prepare and read papers at the meetings.

The Officers of the Branch are: *President*: Professor E. F. Simonds; *Vice-Presidents*: Mr. R. A. Kerr, Mr. E. W. Jones; *Hon. Secretary and Hon. Treasurer*: Assoc. Professor J. P. McCarthy; *Members of Committee*: Miss E. H. Raybould, Mr. S. G. Brown, Mr. J. C. Deeney, Mr. P. B. McGovern, Mr. H. M. Finucan. J. P. MCCARTHY, *Hon. Secretary*.

VICTORIA BRANCH.

REPORT FOR THE YEAR 1950.

THE number of members of the Branch is 61, of whom 6 are life members, 26 associate members, 4 are institutions, and the others ordinary members.

Five meetings were held during the year:

May. Annual Meeting and election of office-bearers. After the formal business, the evening was devoted to a discussion on the teaching of trigonometry, initiated by Messrs. Syer and Clark.

July. Mr. J. A. Macdonald spoke on "Applied Pure Mathematics" and outlined mathematical investigations, originating in problems from widely diverse fields, which he had conducted in connection with his work at Defence Research Laboratories.

August. Mr. G. L. White, also of Defence Research Laboratories, spoke on some very interesting and topical applications of the commoner statistical distributions.

September. At this meeting the discussion on the teaching of trigonometry was continued in accordance with a resolution passed at the close of the May meeting. Messrs. Syer and Clark concluded their contribution to the discussion and handed over to Messrs. Bowe and Manley.

November. Mr. E. H. Palfreyman gave a very instructive address on the mathematics of gambling. This meeting took place in the week preceding that in which the Melbourne Cup was run, and some attention was paid to methods of staking.

J. M. ALLEN, *Hon. Secretary.*

BOOKS RECEIVED FOR REVIEW.

H. Beghin et G. Julia. *Exercices de mécanique*. I, 2. 2nd edition. Pp. 339-581. 1951. (Gauthier-Villars)

D. L. Bernstein. *Existence theorems in partial differential equations*. Pp. vii, 228. 16s. 1950. *Annals of Mathematics Studies*, 23. (Princeton University Press; Geoffrey Cumberlege, Oxford University Press)

W. Blaschke. *Kreis und Kugel*. Rep. Pp. x, 169. \$3.50. 1949. (Chelsea Co., New York)

S. Bochner. *Vorlesungen über Fouriersche Integrale*. Rep. Pp. 229. \$3.95. 1949. (Chelsea Co., New York)

G. Bouligand. *L'accès aux principes de la géométrie euclidienne*. Pp. vii, 88. 320 fr. 1951. (Vuibert, Paris)

N. Bourbaki. *Fonctions d'une variable réelle*. Chs. IV-VIII. Pp. 200. 1951. (Hermann, Paris)

P. Burgatti. *Memorie scelte*. Pp. vi, 354. L. 2500. 1951. (Zanichelli, Bologna)

C. Chevalley. *Introduction to the theory of algebraic functions of one variable*. Pp. xi, 188. \$4. 1951. *Mathematical Surveys*, 6. (American Mathematical Society, New York)

A. Delachet et J. Taillé. *La ballistique*. Pp. 128. 1951. (Presses Universitaires de France, Paris)

W. J. Dixon and F. J. Massey. *An introduction to statistical analysis*. Pp. x, 370. 38s. 6d. 1951. (McGraw-Hill)

R. Garnier. *Cours de cinématique*. III. *Géométrie et cinématique cayleyennes*. Pp. xi, 376. 3000 fr. 1951. (Gauthier-Villars)

J. D. N. Gasson. *Mathematics for technical students*. I. II. Pp. xii, 417; x, 431. 15s. each. 1951. (Cambridge University Press)

F. Hausdorff. *Grundzüge der Mengenlehre*. Rep. Pp. viii, 476. \$4.95. 1949. (Chelsea Co., New York)

E. Hecke. *Vorlesungen über die theorie der algebraischen Zahlen*. Rep. Pp. viii, 266. \$3.95. 1948. (Chelsea Co., New York)

P. Hood. *Observing the heavens*. Pp. 64. 5s. 6d. 1951. (Geoffrey Cumberlege, Oxford University Press)

A. V. Howard. *Chambers's dictionary of scientists*. Pp. 250. 12s. 6d. (W. and R. Chambers)

E. Kamke. *Differentialgleichungen. Lösungsmethoden und Lösungen*. I. 3rd edition, rep. Pp. xxvi, 666. \$7. 1948. (Chelsea Co., New York)

BOOKS RECEIVED FOR REVIEW

xi

- F. Klein. *Vorlesungen über höhere Geometrie*. 3rd edition, rep. Pp. vi, 405. \$4.95. 1949. (Chelsea Co., New York)
- J. F. Koksma. *Diophantische Approximationen*. Rep. Pp. 157. \$3.50. (Chelsea Co., New York)
- E. Landau. *Einführung in die elementare und analytische Theorie der algebraischen Zahlen und der Ideale*. 2nd edition, rep. Pp. vii, 147. \$2.95. 1949. (Chelsea Co., New York)
- P. Lévy. *Problèmes concrets d'analyse fonctionnelle*. 2nd edition of *Leçons d'analyse fonctionnelle*. Pp. xiv, 484. 4000 fr. 1951. (Gauthier-Villars)
- E. A. Maxwell. *General homogeneous coordinates in space of three dimensions*. Pp. xix, 169. 15s. 1951. (Cambridge University Press)
- L. M. Milne-Thomson. *Jacobian elliptic function tables*. New edition. Pp. xi, 123. \$2.45. 1951. (Dover Publications, New York)
- R. von Mises. *Wahrscheinlichkeit, Statistik und Wahrheit*. 3rd edition. Pp. ix, 278. 31s. 1951. (Springer, Vienna)
- E. H. Neville. *Jacobian elliptic functions*. 2nd edition. Pp. xvi, 345. 30s. 1951. (Geoffrey Cumberlege, Oxford University Press)
- A. Ostrowski. *Vorlesungen über Differential- und Integralrechnung. II*. Pp. 482. Sw. fr. 63; geb. Sw. fr. 67. 1951. (Birkhäuser, Basel)
- O. Perron. *Die Lehre von den Kettenbrüchen*. 2nd edition, rep. Pp. xii, 524. \$5.50. 1950. (Chelsea Co., New York)
- P. Rosenbloom. *The elements of mathematical logic*. Pp. iv, 214. \$2.95. 1951. (Dover Publications, New York)
- J. B. Scarborough. *Numerical mathematical analysis*. 2nd edition. Pp. xviii, 511. 48s. 1950. (Johns Hopkins Press; Geoffrey Cumberlege, Oxford University Press)
- B. Segre. *Arithmetical questions on algebraic varieties*. Pp. 55. 10s. 6d. 1951. (University of London Athlone Press)
- E. C. Titchmarsh. *The theory of the Riemann zeta-function*. Pp. 346. 40s. 1951. (Geoffrey Cumberlege, Oxford University Press)
- C. J. Tranter. *Integral transforms in mathematical physics*. Pp. ix, 118. 6s. 1951. (Methuen)
- C. O. Tuckey. *Basic trigonometry*. Pp. ix, 204. 6s. 6d.; with answers, 7s. 6d. 1951. (Christophers)
- G. Verriest. *Introduction à la géométrie non-euclidienne par la méthode élémentaire*. Pp. vii, 192. 1000 fr. 1951. (Gauthier-Villars)
- H. Weyl. *Die Idee der Riemannschen Fläche*. Rep. Pp. viii, 183. \$3.50. 1951. (Chelsea Co., New York)
- Contributions to the theory of games*. Edited by H. W. Kuhn and A. W. Tucker. Pp. xv, 201. 20s. 1950. *Annals of Mathematics Studies*, 24. (Princeton University Press; Geoffrey Cumberlege, Oxford University Press)
- Professional opportunities in mathematics*. A report prepared by a committee of the Mathematical Association of America. Pp. 24. 25c. 1951. (H. M. Gehman, University of Buffalo, Buffalo 14, N.Y.)
- L. Kollros : Jakob Steiner. R. Fueter : Leonhard Euler. J. J. Burckhardt : Ludwig Schläfli. E. Voellmy : Jost Bürgi und die Logarithmen. J. O. Fleckenstein : Johann und Jakob Bernoulli. L. Kollros : Evariste Galois. O. Ore : Niels Henrik Abel. R. Taton : Gaspard Monge. J. Itard : Pierre Fermat. L. v. Dávid : Die beiden Bolyai. 24 pp. each. Sw. fr. 3.50 each. Beihefte zu *Elemente der Mathematik*, Nos. 2-11, 1947-1951 (Birkhäuser, Basel).

PUBLISHED IN 1951

A UNIVERSITY ALGEBRA

D. E. LITTLEWOOD

Professor of Mathematics, University College, Bangor

Covers all the Algebra required for a degree course in Mathematics, both for Pass Degree and Honours Degree work.

The earlier chapters discuss fully the theory of determinants and matrices with the attendant work on quadratic and Hermitian forms. Subsequently such topics as congruence theory, quadratic reciprocity, algebraic fields, solution and theory of algebraic equations, groups, ideals, Galois theory of equations, invariants, tensors, noncommutative algebras and matrix representations of groups receive thorough treatment.

Medium 8vo

25s. od. net.

300 pages

INTRODUCTION TO STATISTICAL METHOD

B. C. BROOKES, M.A.

University College, London

and W. F. L. DICK, M.A.

Technical Officer, Imperial Chemical Industries

A simple and readable introduction to the subject, which ranges from descriptive statistics to the design of experiments. A special feature is the collection of 200 exercises and examples, with answers and hints for solution.

The book covers the statistics syllabuses of the General Certificate Examining bodies, and the Methodological part of the Certificate examination of the Royal Statistical Society.

Abundantly illustrated, and with all necessary tables.

Part One 9s. 6d.

Parts One and Two complete 21s. od.

WILLIAM HEINEMANN

99 GREAT RUSSELL STREET, LONDON, W.C.1

e-
r-
ic
u-
n
y
as
t-
es

h
.
-
-
e

.